



SEQUENCE LISTING

<110> Amylin Pharmaceuticals, Inc.
Baron, Alain et al.

<120> COMPOSITIONS FOR THE TREATMENT AND PREVENTION OF NEPHROPATHY

<130> 18528.675 (0218-UTL-9)

<140> 10/741,534

<141> 2003-12-19

<150> 10/740,146

<151> 2003-12-17

<150> 60/434,508

<151> 2002-12-17

<150> 60/434,888

<151> 2002-12-19

<160> 34

<170> PatentIn Ver. 3.2 and Microsoft Word

<210> 1

<211> 30

<212> PRT

<213> Artificial Sequence

<220>

<223> GLP-1 (7-36)

<220>

<221> MOD_RES

<222> (30)..(30)

<223> AMIDATION, Arg at position 30 may optionally be Amidated

<400> 1

His Ala Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu Gly
1 5 10 15

Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Lys Gly Arg
20 25 30

<210> 2

<211> 31

<212> PRT

<213> artificial sequence

<220>

<223> artificial sequence with specific variable residues

<220>
 <221> variant
 <222> (1)..(1)
 <223> 4-imidazopropionyl (des-amino-histidyl), 4-imidazoacetyl, or
 4-imidazo-alpha, alpha dimethyl-acetyl

 <220>
 <221> variant
 <222> (20)..(20)
 <223> Lys or Arg

 <220>
 <221> variant
 <222> (28)..(28)
 <223> Lys at position 28 is optionally branched with a C6-C10 unbranched acyl
 group

 <220>
 <221> variant
 <222> (31)..(31)
 <223> Gly-OH or NH2

 <400> 2

 Xaa Ala Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu Gly
 1 5 10 15

 Gln Ala Ala Xaa Glu Phe Ile Ala Trp Leu Val Lys Gly Arg Xaa
 20 25 30

 <210> 3
 <211> 21
 <212> PRT
 <213> artificial sequence

 <220>
 <223> artificial sequence with specific variable residues

 <220>
 <221> variant
 <222> (1)..(1)
 <223> X at position 1 is NH2, NH2-Ser, NH2-Val-Ser or NH2-Asp-Val-Ser

 <220>
 <221> variant
 <222> (18)..(18)
 <223> X at position 18 is Lys or Arg

 <220>
 <221> variant
 <222> (21)..(21)
 <223> X at position 21 is NH2, OH, Gly-NH2, or Gly-OH

<400> 3

Xaa Ser Tyr Leu Glu Gly Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu
1 5 10 15

Val Xaa Gly Arg Xaa
20

<210> 4

<211> 21

<212> PRT

<213> artificial sequence

<220>

<223> artificial sequence with specific variable residues

<220>

<221> variant

<222> (1)..(1)

<223> NH2-Ser-Asp-Val-Ser

<220>

<221> variant

<222> (18)..(18)

<223> X at position 18 is Lys or Arg

<220>

<221> variant

<222> (21)..(21)

<223> X at position 21 is NH2, OH, Gly-NH2, or Gly-OH

<400> 4

Xaa Ser Tyr Leu Glu Gly Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu
1 5 10 15

Val Xaa Gly Arg Xaa
20

<210> 5

<211> 21

<212> PRT

<213> artificial sequence

<220>

<223> artificial sequence with specific variable residues

<220>

<221> variant

<222> (1)..(1)

<223> X at position 1 is NH2-Thr-Ser-Asp-Val-Ser

<220>

<221> variant

<222> (18)..(18)

<223> X at position 18 is Lys or Arg

<220>

<221> variant

<222> (21)..(21)

<223> X at position 21 is NH2, OH, Gly-NH2, or Gly-OH

<400> 5

Xaa	Ser	Tyr	Leu	Glu	Gly	Gln	Ala	Ala	Lys	Glu	Phe	Ile	Ala	Trp	Leu
1				5					10					15	

Val	Xaa	Gly	Arg	Xaa
				20

<210> 6

<211> 21

<212> PRT

<213> artificial sequence

<220>

<223> artificial sequence with specific variable residues

<220>

<221> variant

<222> (1)..(1)

<223> X at position 1 is NH2-Phe-Thr-Ser-Asp-Val-Ser

<220>

<221> variant

<222> (18)..(18)

<223> X at position 18 is Lys or Arg

<220>

<221> variant

<222> (21)..(21)

<223> X at position 21 is NH2, OH, Gly-NH2 or Gly-OH

<400> 6

Xaa	Ser	Tyr	Leu	Glu	Gly	Gln	Ala	Ala	Lys	Glu	Phe	Ile	Ala	Trp	Leu
1				5					10					15	

Val	Xaa	Gly	Arg	Xaa
				20

<210> 7
 <211> 21
 <212> PRT
 <213> artificial sequence

 <220>
 <223> artificial sequence with specific variable residues

<220>
 <221> variant
 <222> (1)..(1)
 <223> X at position 1 is NH2-Thr-Phe-Thr-Ser-Asp-Val-Ser

<220>
 <221> variant
 <222> (18)..(18)
 <223> X at position 1 is Lys or Arg

<220>
 <221> variant
 <222> (21)..(21)
 <223> X at position 21 is NH2, OH, Gly-NH2 or Gly-OH

<400> 7

Xaa	Ser	Tyr	Leu	Glu	Gly	Gln	Ala	Ala	Lys	Glu	Phe	Ile	Ala	Trp	Leu
1				5					10					15	

Val	Xaa	Gly	Arg	Xaa
			20	

<210> 8
 <211> 21
 <212> PRT
 <213> artificial sequence

 <220>
 <223> artificial sequence with specific variable residues

<220>
 <221> variant
 <222> (1)..(1)
 <223> X at position 1 is NH2-Gly-Thr-Phe-Thr-Ser-Asp-Val-Ser

<220>
 <221> variant
 <222> (18)..(18)
 <223> X at position 18 is Lys or Arg

<220>
 <221> variant
 <222> (21)..(21)

<223> X at position 21 is NH2, OH, Gly-NH2 or Gly-OH

<400> 8

Xaa	Ser	Tyr	Leu	Glu	Gly	Gln	Ala	Ala	Lys	Glu	Phe	Ile	Ala	Trp	Leu
1				5					10					15	

Val	Xaa	Gly	Arg	Xaa
				20

<210> 9

<211> 21

<212> PRT

<213> artificial sequence

<220>

<223> artificial sequence with specific variable residues

<220>

<221> variant

<222> (1)..(1)

<223> X at position 1 is NH2-Glu-Gly-Thr-Phe-Thr-Ser-Asp-Val-Ser

<220>

<221> variant

<222> (18)..(18)

<223> X at position 18 is Lys or Arg

<220>

<221> variant

<222> (21)..(21)

<223> X at position 21 is NH2, OH, Gly-NH2 or Gly-OH

<400> 9

Xaa	Ser	Tyr	Leu	Glu	Gly	Gln	Ala	Ala	Lys	Glu	Phe	Ile	Ala	Trp	Leu
1				5					10					15	

Val	Xaa	Gly	Arg	Xaa
				20

<210> 10

<211> 21

<212> PRT

<213> artificial sequence

<220>

<223> artificial sequence with specific variable residues

<220>

<221> variant
 <222> (1)..(1)
 <223> X at position 1 is NH2-Ala-Glu-Gly-Thr-Phe-Thr-Ser-Asp-Val-Ser

<220>
 <221> variant
 <222> (18)..(18)
 <223> X at position 18 is Lys or Arg

<220>
 <221> variant
 <222> (21)..(21)
 <223> X at position 21 is NH2, OH, Gly-NH2 or Gly-OH

<400> 10

Xaa Ser Tyr Leu Glu Gly Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu
 1 5 10 15

Val Xaa Gly Arg Xaa
 20

<210> 11
 <211> 31
 <212> PRT
 <213> artificial sequence

<220>
 <223> artificial sequence with specific variable residues

<220>
 <221> variant
 <222> (29)..(29)
 <223> X at position 29, if GLP-1 (7-35) is Gly

<220>
 <221> variant
 <222> (30)..(30)
 <223> X at position 29, if GLP-1 (7-36) is Gly-Arg

<220>
 <221> variant
 <222> (31)..(31)
 <223> X at position 29, if GLP-1 (7-37) is Gly-Arg-Gly

<400> 11

His Ala Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu Gly
 1 5 10 15

Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Lys Xaa Xaa Xaa
 20 25 30

<210> 12
 <211> 39
 <212> PRT
 <213> Heloderma horridum

<220>
 <221> MOD_RES
 <222> (39)
 <223> AMIDATION, Position 39 is Ser-NH2

<400> 12

His Ser Asp Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu
 1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn Gly Gly Pro Ser
 20 25 30

Ser Gly Ala Pro Pro Pro Ser
 35

<210> 13
 <211> 31
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> artificial sequence with specific variable residues

<220>
 <221> MOD_RES
 <222> (31)..(31)
 <223> AMIDATION

<400> 13

Asp Leu Ser Lys Gln Met Glu Glu Glu Ala Val Arg Leu Phe Ile Glu
 1 5 10 15

Trp Leu Lys Asn Gly Gly Pro Ser Ser Gly Ala Pro Pro Pro Ser
 20 25 30

<210> 14
 <211> 39
 <212> PRT
 <213> Heloderma suspectum

<220>
 <221> MOD_RES
 <222> (39)
 <223> AMIDATION, Position 39 is Ser-NH2

<400> 14

His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu
1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn Gly Gly Pro Ser
20 25 30

Ser Gly Ala Pro Pro Pro Ser
35

<210> 15

<211> 38

<212> PRT

<213> Artificial Sequence

<220>

<223> artificial sequence with specific variable residues

<400> 15

His Ser Asp Ala Thr Phe Thr Ala Glu Tyr Ser Lys Leu Leu Ala Lys
1 5 10 15

Leu Ala Leu Gln Lys Tyr Leu Glu Ser Ile Leu Gly Ser Ser Thr Ser
20 25 30

Pro Arg Pro Pro Ser Ser
35

<210> 16

<211> 37

<212> PRT

<213> Artificial Sequence

<220>

<223> artificial sequence with specific variable residues

<400> 16

His Ser Asp Ala Thr Phe Thr Ala Glu Tyr Ser Lys Leu Leu Ala Lys
1 5 10 15

Leu Ala Leu Gln Lys Tyr Leu Glu Ser Ile Leu Gly Ser Ser Thr Ser
20 25 30

Pro Arg Pro Pro Ser
35

<210> 17

<211> 35
<212> PRT
<213> Artificial Sequence

<220>
<223> artificial sequence with specific variable residues

<220>
<221> MOD_RES
<222> (35)..(35)
<223> AMIDATION

<400> 17

His Ser Asp Ala Ile Phe Thr Glu Glu Tyr Ser Lys Leu Leu Ala Lys
1 5 10 15

Leu Ala Leu Gln Lys Tyr Leu Ala Ser Ile Leu Gly Ser Arg Thr Ser
20 25 30

Pro Pro Pro
35

<210> 18
<211> 35
<212> PRT
<213> Artificial Sequence

<220>
<223> artificial sequence with specific variable residues

<220>
<221> MOD_RES
<222> (35)..(35)
<223> AMIDATION

<400> 18

His Ser Asp Ala Ile Phe Thr Gln Gln Tyr Ser Lys Leu Leu Ala Lys
1 5 10 15

Leu Ala Leu Gln Lys Tyr Leu Ala Ser Ile Leu Gly Ser Arg Thr Ser
20 25 30

Pro Pro Pro
35

<210> 19

<211> 30
<212> PRT
<213> Artificial sequence

<220>
<223> Exendin-4 (1-30)

<400> 19

His	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Met	Glu	Glu
1				5					10					15	

Glu	Ala	Val	Arg	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	Gly	Gly
			20					25					30

<210> 20
<211> 30
<212> PRT
<213> Artificial sequence

<220>
<223> Exendin-4 (1-30) Amide

<220>
<221> Variant
<222> (30)..(30)
<223> Gly-NH2

<400> 20

His	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Met	Glu	Glu
1				5					10					15	

Glu	Ala	Val	Arg	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	Gly	Gly
			20					25					30

<210> 21
<211> 28
<212> PRT
<213> Artificial Sequence

<220>
<223> Exendin-4 (1-28) Amide

<220>
<221> Variant
<222> (28)..(28)
<223> Asn-NH2

<400> 21

His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu
 1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn
 20 25

<210> 22
 <211> 39
 <212> PRT
 <213> Artificial sequence

<220>
 <223> 14-Leu, 25-Phe form of exendin-4

<220>
 <221> variant
 <222> (39)..(39)
 <223> Ser-NH2

<400> 22

His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu
 1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Phe Leu Lys Asn Gly Gly Pro Ser
 20 25 30

Ser Gly Ala Pro Pro Pro Ser
 35

<210> 23
 <211> 28
 <212> PRT
 <213> Artificial sequence

<220>
 <223> Truncated form of 14-leu, 25-Phe exendin-4

<220>
 <221> Variant
 <222> (28)..(28)
 <223> Asn-NH2

<400> 23

His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu

1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Phe Leu Lys Asn
20 25

<210> 24
<211> 28
<212> PRT
<213> Artificial Sequence

<220>
<223> 14-Leu, 22-Ala, 25-Phe form of exendin-4(1-28)

<220>
<221> variant
<222> (28)..(28)
<223> Asn-NH2

<400> 24

His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu
1 5 10 15

Glu Ala Val Arg Leu Ala Ile Glu Phe Leu Lys Asn
20 25

<210> 25
<211> 29
<212> PRT
<213> Artificial Sequence

<220>
<223> Formula III: artificial sequence with specific variable residues

<220>
<221> Variant
<222> (1)..(1)
<223> His, Arg or Tyr

<220>
<221> Variant
<222> (2)..(2)
<223> Ser, Gly, Ala or Thr

<220>
<221> Variant
<222> (3)..(3)
<223> Asp or Glu

<220>
 <221> Variant
 <222> (5)..(5)
 <223> Ala or Thr

<220>
 <221> Variant
 <222> (6)..(6)
 <223> Ala, Phe, Tyr or naphthylalanine

<220>
 <221> Variant
 <222> (7)..(7)
 <223> Thr or Ser

<220>
 <221> Variant
 <222> (8)..(8)
 <223> Ala, Ser or Thr

<220>
 <221> Variant
 <222> (9)..(9)
 <223> Asp or Glu

<220>
 <221> Variant
 <222> (10)..(10)
 <223> Ala, Leu, Ile, Val, pentylglycine or Met

<220>
 <221> Variant
 <222> (11)..(11)
 <223> Ala or Ser

<220>
 <221> Variant
 <222> (12)..(12)
 <223> Ala or Lys

<220>
 <221> Variant
 <222> (13)..(13)
 <223> Ala or Gln

<220>
 <221> Variant
 <222> (14)..(14)
 <223> Ala, Leu, Ile, Val, pentylglycine, Val or Met

<220>
 <221> Variant
 <222> (15)..(17)
 <223> Ala or Glu

<220>

<221> Variant
 <222> (19)..(19)
 <223> Ala or Val

 <220>
 <221> Variant
 <222> (20)..(20)
 <223> Ala or Arg

 <220>
 <221> Variant
 <222> (21)..(21)
 <223> Ala or Leu

 <220>
 <221> Variant
 <222> (22)..(22)
 <223> Ala, Phe, Tyr or naphthylalanine

 <220>
 <221> Variant
 <222> (23)..(23)
 <223> Ile, Val, Leu, pentylglycine, tert-butylglycine or Met

 <220>
 <221> Variant
 <222> (24)..(24)
 <223> Ala, Glu or Asp

 <220>
 <221> Variant
 <222> (25)..(25)
 <223> Ala, Trp, Phe, Tyr or naphthylalanine

 <220>
 <221> Variant
 <222> (26)..(26)
 <223> Ala or Leu

 <220>
 <221> Variant
 <222> (27)..(27)
 <223> Ala or Lys

 <220>
 <221> Variant
 <222> (28)..(28)
 <223> Ala or Asn

 <220>
 <221> Variant
 <222> (29)..(29)
 <223> OH, NH₂, Gly-OH, Gly-N₂, Gly-Gly-OH, Gly-Gly-NH₂, and further as
 indicated in the specification

 <400> 25

Xaa Xaa Xaa Gly Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
 1 5 10 15

Xaa Ala Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
 20 25

<210> 26
 <211> 29
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Formula IV: Artificial sequence with specific variable residues

<220>
 <221> Variant
 <222> (1)..(1)
 <223> His, Arg, Tyr, Ala, Norval, Val or Norleu

<220>
 <221> Variant
 <222> (2)..(2)
 <223> Ser, Gly, Ala or Thr

<220>
 <221> Variant
 <222> (3)..(3)
 <223> Ala, Asp or Glu

<220>
 <221> Variant
 <222> (4)..(4)
 <223> Ala, Norval, Val, Norleu or Gly

<220>
 <221> Variant
 <222> (5)..(5)
 <223> Ala or Thr

<220>
 <221> Variant
 <222> (6)..(6)
 <223> Phe, Tyr or naphthylalanine

<220>
 <221> Variant
 <222> (7)..(7)
 <223> Thr or Ser

<220>
 <221> Variant
 <222> (8)..(8)

<223> Ala, Ser or Thr

 <220>
 <221> Variant
 <222> (9)..(9)
 <223> Ala, Norval, Val, Norleu, Asp or Glu

 <220>
 <221> Variant
 <222> (10)..(10)
 <223> Ala, Leu, Ile, Val, pentylglycine or Met

 <220>
 <221> Variant
 <222> (11)..(11)
 <223> Ala or Ser

 <220>
 <221> Variant
 <222> (12)..(12)
 <223> Ala or Lys

 <220>
 <221> Variant
 <222> (13)..(13)
 <223> Ala or Gln

 <220>
 <221> Variant
 <222> (14)..(14)
 <223> Ala, Leu, Ile, pentylglycine, Val or Met

 <220>
 <221> Variant
 <222> (15)..(17)
 <223> Ala or Glu

 <220>
 <221> Variant
 <222> (19)..(19)
 <223> Ala or Val

 <220>
 <221> Variant
 <222> (20)..(20)
 <223> Ala or Arg

 <220>
 <221> Variant
 <222> (21)..(21)
 <223> Ala or Leu

 <220>
 <221> Variant
 <222> (22)..(22)
 <223> Phe, Tyr or naphthylalanine

<220>
 <221> Variant
 <222> (23)..(23)
 <223> Ile, Val, Leu, pentylglycine, tert-butylglycine or Met

<220>
 <221> Variant
 <222> (24)..(24)
 <223> Ala, Glu or Asp

<220>
 <221> Variant
 <222> (25)..(25)
 <223> Ala, Trp, Phe, Tyr or naphthylalanine

<220>
 <221> Variant
 <222> (26)..(26)
 <223> Ala or Leu

<220>
 <221> Variant
 <222> (27)..(27)
 <223> Ala or Lys

<220>
 <221> Variant
 <222> (28)..(28)
 <223> Ala or Asn

<220>
 <221> Variant
 <222> (29)..(29)
 <223> OH, NH2, Gly-OH, Gly-NH2, Gly-Gly-OH, Gly-Gly-NH2, and further as
 indicated in the specification

<400> 26

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
 1 5 10 15

Xaa Ala Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
 20 25

<210> 27
 <211> 29
 <212> PRT
 <213> artificial sequence

<220>
 <223> Formula V: Artificial sequence with specific variable residues

<220>
 <221> VARIANT
 <222> (1)..(1)
 <223> His or Arg

 <220>
 <221> VARIANT
 <222> (2)..(2)
 <223> Gly or Ala

 <220>
 <221> VARIANT
 <222> (3)..(3)
 <223> Asp or Glu

 <220>
 <221> VARIANT
 <222> (5)..(5)
 <223> Ala or Thr

 <220>
 <221> VARIANT
 <222> (6)..(6)
 <223> Ala, Phe or naphthalanine

 <220>
 <221> VARIANT
 <222> (7)..(7)
 <223> Thr or Ser

 <220>
 <221> VARIANT
 <222> (8)..(8)
 <223> Ala, Ser or Thr

 <220>
 <221> VARIANT
 <222> (9)..(9)
 <223> Asp or Glu

 <220>
 <221> VARIANT
 <222> (10)..(10)
 <223> Ala, Leu or pentylglycine

 <220>
 <221> VARIANT
 <222> (11)..(11)
 <223> Ala or Ser

 <220>
 <221> VARIANT
 <222> (12)..(12)
 <223> Ala or Lys

 <220>

<221> VARIANT
 <222> (13)..(13)
 <223> Ala or Gln

 <220>
 <221> VARIANT
 <222> (14)..(14)
 <223> Ala, Leu or pentylglycine

 <220>
 <221> VARIANT
 <222> (15)..(17)
 <223> Ala or Glu

 <220>
 <221> VARIANT
 <222> (19)..(19)
 <223> Ala or Val

 <220>
 <221> VARIANT
 <222> (20)..(20)
 <223> Ala or Arg

 <220>
 <221> VARIANT
 <222> (21)..(21)
 <223> Ala or Leu

 <220>
 <221> VARIANT
 <222> (22)..(22)
 <223> Phe or naphthylalanine

 <220>
 <221> VARIANT
 <222> (23)..(23)
 <223> Ile, Val or tert-butylglycine

 <220>
 <221> VARIANT
 <222> (24)..(24)
 <223> Ala, Glu or Asp

 <220>
 <221> VARIANT
 <222> (25)..(25)
 <223> Ala, Trp or Phe

 <220>
 <221> VARIANT
 <222> (26)..(26)
 <223> Ala or Leu

 <220>
 <221> VARIANT

<222> (27)..(27)
 <223> Ala or Lys

 <220>
 <221> VARIANT
 <222> (28)..(28)
 <223> Ala or Asn

 <220>
 <221> VARIANT
 <222> (29)..(29)
 <223> -OH, -NH2, Gly-OH, Gly-NH2, Gly Gly-ON, Gly Gly-NH2 and further
 as indicated in the specification

 <400> 27

 Xaa Xaa Xaa Gly Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
 1 5 10 15

 Xaa Ala Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
 20 25

 <210> 28
 <211> 29
 <212> PRT
 <213> Artificial Sequence

 <220>
 <223> Formula VI:Artificial sequence with specific variable residues

 <220>
 <221> VARIANT
 <222> (1)..(1)
 <223> His or Ala

 <220>
 <221> VARIANT
 <222> (2)..(2)
 <223> Gly or Ala

 <220>
 <221> VARIANT
 <222> (3)..(3)
 <223> Ala, Asp or Glu

 <220>
 <221> VARIANT
 <222> (4)..(4)
 <223> Ala or Gly

 <220>
 <221> VARIANT
 <222> (5)..(5)

<223> Ala or Thr

 <220>
 <221> VARIANT
 <222> (6)..(6)
 <223> Phe or naphthylalanine

 <220>
 <221> VARIANT
 <222> (7)..(7)
 <223> Thr or Ser

 <220>
 <221> VARIANT
 <222> (8)..(8)
 <223> Ala, Ser or Thr

 <220>
 <221> VARIANT
 <222> (9)..(9)
 <223> Ala, Asp or Glu

 <220>
 <221> VARIANT
 <222> (10)..(10)
 <223> Ala, Leu or pentylglycine

 <220>
 <221> VARIANT
 <222> (11)..(11)
 <223> Ala or Ser

 <220>
 <221> VARIANT
 <222> (12)..(12)
 <223> Ala or Lys

 <220>
 <221> VARIANT
 <222> (13)..(13)
 <223> Ala or Gln

 <220>
 <221> VARIANT
 <222> (14)..(14)
 <223> Ala, Leu, Met or pentylglycine

 <220>
 <221> VARIANT
 <222> (15)..(17)
 <223> Ala or Glu

 <220>
 <221> VARIANT
 <222> (19)..(19)
 <223> Ala or Val

<220>
 <221> VARIANT
 <222> (20)..(20)
 <223> Ala or Arg

 <220>
 <221> VARIANT
 <222> (21)..(21)
 <223> Ala or Leu

 <220>
 <221> VARIANT
 <222> (22)..(22)
 <223> Phe or naphthylalanine

 <220>
 <221> VARIANT
 <222> (23)..(23)
 <223> Ile, Val or tert-butylglycine

 <220>
 <221> VARIANT
 <222> (24)..(24)
 <223> Ala, Glu or Asp

 <220>
 <221> VARIANT
 <222> (25)..(25)
 <223> Ala, Trp or Phe

 <220>
 <221> VARIANT
 <222> (26)..(26)
 <223> Ala or Leu

 <220>
 <221> VARIANT
 <222> (27)..(27)
 <223> Ala or Lys

 <220>
 <221> VARIANT
 <222> (28)..(28)
 <223> Ala or Asn

 <220>
 <221> VARIANT
 <222> (29)..(29)
 <223> -OH, -NH2, Gly-OH, Gly-NH2, Gly Gly-ON, Gly Gly-NH2 and further
 as indicated in the specification

 <400> 28

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
 1 5 10 15

Xaa Ala Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
 20 25

<210> 29
 <211> 28
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Formula VII: Artificial sequence with specific variable residues

<220>
 <221> VARIANT
 <222> (1)..(1)
 <223> His, Arg, Tyr or 4-imidazopropionyl

<220>
 <221> VARIANT
 <222> (2)..(2)
 <223> Ser, Gly, Ala or Thr

<220>
 <221> VARIANT
 <222> (3)..(3)
 <223> Asp or Glu

<220>
 <221> VARIANT
 <222> (5)..(5)
 <223> Ala or Thr

<220>
 <221> VARIANT
 <222> (6)..(6)
 <223> Ala, Phe, Tyr or naphthylalanine

<220>
 <221> VARIANT
 <222> (7)..(7)
 <223> Thr or Ser

<220>
 <221> VARIANT
 <222> (8)..(8)
 <223> Ala, Ser or Thr

<220>
 <221> VARIANT
 <222> (9)..(9)
 <223> Asp or Glu

<220>

<221> VARIANT
 <222> (10)..(10)
 <223> Ala, Leu, Ile, Val, pentylglycine or Met

 <220>
 <221> VARIANT
 <222> (11)..(11)
 <223> Ala or Ser

 <220>
 <221> VARIANT
 <222> (12)..(12)
 <223> Ala or Lys

 <220>
 <221> VARIANT
 <222> (13)..(13)
 <223> Ala or Gln

 <220>
 <221> VARIANT
 <222> (14)..(14)
 <223> Ala, Leu, Ile, pentylglycine, Val or Met

 <220>
 <221> VARIANT
 <222> (15)..(17)
 <223> Ala or Glu

 <220>
 <221> VARIANT
 <222> (19)..(19)
 <223> Ala or Val

 <220>
 <221> VARIANT
 <222> (20)..(20)
 <223> Ala or Arg

 <220>
 <221> VARIANT
 <222> (21)..(21)
 <223> Ala, Leu or Lys-NH.Sigma.-R, where R is Lys, Arg, C1-C10 straight-chain
 or branched alkanoyl or cycloalkanoyl

 <220>
 <221> VARIANT
 <222> (22)..(22)
 <223> Phe, Tyr or naphthylalanine

 <220>
 <221> VARIANT
 <222> (23)..(23)
 <223> Ile, Val, Leu, pentylglycine, tert-butylglycine or Met

 <220>

<221> VARIANT
 <222> (24)..(24)
 <223> Ala, Glu or Asp

 <220>
 <221> VARIANT
 <222> (25)..(25)
 <223> Ala, Trp, Phe, Tyr or naphthylalanine

 <220>
 <221> VARIANT
 <222> (26)..(26)
 <223> Ala or Leu

 <220>
 <221> VARIANT
 <222> (27)..(27)
 <223> Lys Asn, Asn Lys, Lys-NH.Sigma.-R Asn, Asn Lys-NH.Sigma.-R, Lys-NH.Sigma.-R Ala, Ala Lys-NH.Sigma.-R where R is Lys, Arg, C1-C10 straight-chain or branched alkanoyl or cycloalkylalkanoyl

 <220>
 <221> VARIANT
 <222> (28)..(28)
 <223> -OH, -NH2, Gly-OH, Gly-NH2, Gly Gly-ON, Gly Gly-NH2 and further as indicated in the specification

 <400> 29

 Xaa Xaa Xaa Gly Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
 1 5 10 15

 Xaa Ala Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
 20 25

 <210> 30
 <211> 29
 <212> PRT
 <213> Artificial sequence

 <220>
 <223> Formula VIII: Artificial sequence with specific variable residues

 <220>
 <221> VARIANT
 <222> (1)..(1)
 <223> His, Arg, Tyr, Ala, Norvaline, Val, Norleucine or 4imidazopropionyl

 <220>
 <221> VARIANT
 <222> (2)..(2)
 <223> Ser, Gly, Ala or Thr

<220>
 <221> VARIANT
 <222> (3)..(3)
 <223> Ala, Asp or Glu

<220>
 <221> VARIANT
 <222> (4)..(4)
 <223> Ala, Norvaline, Val, Norleucine or Gly

<220>
 <221> VARIANT
 <222> (5)..(5)
 <223> Ala or Thr

<220>
 <221> VARIANT
 <222> (6)..(6)
 <223> Phe, Tyr or naphthylalanine

<220>
 <221> VARIANT
 <222> (7)..(7)
 <223> Thr or Ser

<220>
 <221> VARIANT
 <222> (8)..(8)
 <223> Ala, Ser or Thr

<220>
 <221> VARIANT
 <222> (9)..(9)
 <223> Ala, Norvaline, Val, Norleucine, Asp or Glu

<220>
 <221> VARIANT
 <222> (10)..(10)
 <223> Ala, Leu, Ile, Val, pentylglycine or Met

<220>
 <221> VARIANT
 <222> (11)..(11)
 <223> Ala or Ser

<220>
 <221> VARIANT
 <222> (12)..(12)
 <223> Ala or Lys

<220>
 <221> VARIANT
 <222> (13)..(13)
 <223> Ala or Gln

<220>
 <221> VARIANT
 <222> (14)..(14)
 <223> Ala, Leu, Ile, pentylglycine, Val or Met

<220>
 <221> VARIANT
 <222> (15)..(17)
 <223> Ala or Glu

<220>
 <221> VARIANT
 <222> (19)..(19)
 <223> Ala or Val

<220>
 <221> VARIANT
 <222> (20)..(20)
 <223> Ala or Arg

<220>
 <221> VARIANT
 <222> (21)..(21)
 <223> Ala, Leu or Lys-NH.Sigma.-R where R is Lys, Arg, C1-10 straight-chain
 or branched alkanoyl or cycloalylel-alkanoyl

<220>
 <221> VARIANT
 <222> (22)..(22)
 <223> Phe, Tyr or naphthylalanine

<220>
 <221> VARIANT
 <222> (23)..(23)
 <223> Ile, Val, Leu, pentylglycine, tert-butylglycine or Met

<220>
 <221> VARIANT
 <222> (24)..(24)
 <223> Ala, Glu or Asp

<220>
 <221> VARIANT
 <222> (25)..(25)
 <223> Ala, Trp, Phe, Tyr or naphthylalanine

<220>
 <221> VARIANT
 <222> (26)..(26)
 <223> Ala or Leu

<220>
 <221> VARIANT
 <222> (27)..(27)
 <223> Lys Asn, Asn Lys, Lys-NH.Sigma.-R Asn, Asn Lys-NH.Sigma.-R, Lys-
 NH.Sigma.-R Ala, Ala Lys-NH.Sigma.-R where R is Lys, Arg, C1-C10

straight-chain or branched alkanoyl or cycloalkylalkanoyl

<220>

<221> VARIANT

<222> (28)..(28)

<223> -OH, -NH₂, Gly-OH, Gly-NH₂, Gly Gly-ON, Gly Gly-NH₂ and further
as indicated in the specification

<400> 30

Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
1				5					10					15	

Xaa	Ala	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
			20					25							

<210> 31

<211> 39

<212> PRT

<213> Artificial sequence

<220>

<223> Formula IX: artificial sequence with specific variable residues

<220>

<221> VARIANT

<222> (1)..(1)

<223> His, Arg or Tyr

<220>

<221> VARIANT

<222> (2)..(2)

<223> Ser, Gly, Ala or Thr

<220>

<221> VARIANT

<222> (3)..(3)

<223> Asp or Glu

<220>

<221> VARIANT

<222> (6)..(6)

<223> Phe, Tyr or naphthylalanine

<220>

<221> VARIANT

<222> (7)..(7)

<223> Thr or Ser

<220>

<221> VARIANT

<222> (8)..(8)

<223> Thr or Ser

<220>
 <221> VARIANT
 <222> (9)..(9)
 <223> Asp or Glu

 <220>
 <221> VARIANT
 <222> (10)..(10)
 <223> Leu, Ile, Val, pentylglycine or Met

 <220>
 <221> VARIANT
 <222> (14)..(14)
 <223> Leu, Ile, pentylglycine, Val or Met

 <220>
 <221> VARIANT
 <222> (22)..(22)
 <223> Phe, Tyr or naphthylalanine

 <220>
 <221> VARIANT
 <222> (23)..(23)
 <223> Ile, Val, Leu, pentylglycine, tert-butylglycine or Met

 <220>
 <221> VARIANT
 <222> (24)..(24)
 <223> Glu or Asp

 <220>
 <221> VARIANT
 <222> (25)..(25)
 <223> Trp, Phe, Tyr or naphthylalanine

 <220>
 <221> VARIANT
 <222> (31)..(31)
 <223> Pro, homoproline, 3Hyp, 4Hyp, thioproline, N-alkylglycine,
 N-alkylpentylglycine or N-alkylalanine

 <220>
 <221> VARIANT
 <222> (36)..(38)
 <223> Pro, homoproline, 3Hyp, 4Hyp, thioproline, N-alkylglycine,
 N-alkylpentylglycine or N-alkylalanine

 <220>
 <221> VARIANT
 <222> (39)..(39)
 <223> Ser-OH, Ser-NH2, Thr-OH, Thr-NH2, Tyr-OH or Tyr-NH2

 <400> 31

Xaa Xaa Xaa Gly Thr Xaa Xaa Xaa Xaa Xaa Ser Lys Gln Xaa Glu Glu

1	5	10	15
Glu	Ala	Val	Arg
	Leu	Xaa	Xaa
		Xaa	Xaa
		Leu	Lys
		Asn	Gly
			Gly
			Xaa
			Ser
	20	25	30

Ser Gly Ala Xaa Xaa Xaa Xaa
35

<210> 32
 <211> 38
 <212> PRT
 <213> Artificial sequence

<220>
 <223> Formula X: artificial sequence with specific variable residues

<220>
 <221> VARIANT
 <222> (1)..(1)
 <223> His, Arg, Tyr or 4-imidazopropionyl

<220>
 <221> VARIANT
 <222> (2)..(2)
 <223> Ser, Gly, Ala or Thr

<220>
 <221> VARIANT
 <222> (3)..(3)
 <223> Asp or Glu

<220>
 <221> VARIANT
 <222> (6)..(6)
 <223> Phe, Tyr or naphthylalanine

<220>
 <221> VARIANT
 <222> (7)..(7)
 <223> Thr or Ser

<220>
 <221> VARIANT
 <222> (8)..(8)
 <223> Ser or Thr

<220>
 <221> VARIANT
 <222> (9)..(9)
 <223> Asp or Glu

<220>

<221> VARIANT
 <222> (10)..(10)
 <223> Leu, Ile, Val, pentylglycine or Met

 <220>
 <221> VARIANT
 <222> (14)..(14)
 <223> Leu, Ile, pentylglycine, Val or Met

 <220>
 <221> VARIANT
 <222> (22)..(22)
 <223> Phe, Tyr or naphthylalanine

 <220>
 <221> VARIANT
 <222> (23)..(23)
 <223> Ile, Val, Leu, pentylglycine, tert-butylglycine or Met

 <220>
 <221> VARIANT
 <222> (24)..(24)
 <223> Glu or Asp

 <220>
 <221> VARIANT
 <222> (25)..(25)
 <223> Trp, Phe, Tyr or naphthylalanine

 <220>
 <221> VARIANT
 <222> (27)..(27)
 <223> Lys, Asn, Asn, Lys, Lys-NH.Sigma.-R Asn, Asn, Lys-NH.Sigma.-R where R is
 Lys, Arg, C1-C10 straight-chain or branched alkanoyl or
 cycloalkylalkanoyl

 <220>
 <221> VARIANT
 <222> (30)..(30)
 <223> Pro, homoproline, 3Hyp, 4Hyp, thioproline, N-alkylglycine,
 N-alkylpentylglycine or N-alkylalanine

 <220>
 <221> VARIANT
 <222> (35)..(37)
 <223> Pro, homoproline, 3Hyp, 4Hyp, thioproline, N-alkylglycine,
 N-alkylpentylglycine or N-alkylalanine

 <220>
 <221> VARIANT
 <222> (38)..(38)
 <223> Ser-OH, Ser-NH2, Thr-OH, Thr-NH2, Tyr-OH or Tyr-NH2

 <400> 32

Xaa Xaa Xaa Gly Thr Xaa Xaa Xaa Xaa Xaa Ser Lys Gln Xaa Glu Glu

1	5	10	15
Glu	Ala	Val	Arg
	20	Leu	Xaa
		Xaa	Xaa
		Xaa	Xaa
		Leu	Xaa
		Gly	Gly
		Xaa	Ser
		Ser	
		30	

Gly	Ala	Xaa	Xaa	Xaa	Xaa
	35				

<210> 33
 <211> 31
 <212> PRT
 <213> artificial sequence

<220>
 <223> Formula XI: artificial sequence with specific variable residues

<220>
 <221> VARIANT
 <222> (1)..(1)
 <223> X is His, D-His, desamino-His, 2-amino-His, beta.hydroxy-His, homo-His, alpha-fluoromethyl-His, or alpha-methyl-His

<220>
 <221> VARIANT
 <222> (2)..(2)
 <223> X is Met, Asp, Lys, Thr, Leu, Asn, Gln, Phe, Val or Tyr

<220>
 <221> VARIANT
 <222> (15)..(15)
 <223> X is Glu, Gln, Ala, Thr, Ser or Gly

<220>
 <221> VARIANT
 <222> (21)..(21)
 <223> X is Glu, Gln, Ala, Thr, Ser or Gly

<220>
 <221> VARIANT
 <222> (31)..(31)
 <223> X is NH2 or Gly-OH, provided that if X at position 1 is His, X at position 2 is Val, X at position 15 is Glu and X at position 21 is Glu, then X at position 31 is NH2

<400> 33

Xaa	Xaa	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Val	Ser	Ser	Tyr	Leu	Xaa	Gly
1				5					10					15	

Gln	Ala	Ala	Lys	Xaa	Phe	Ile	Ala	Trp	Leu	Val	Lys	Gly	Arg	Xaa
	20						25						30	

<210> 34
 <211> 31
 <212> PRT
 <213> artificial sequence

<220>
 <223> Formula XII: artificial sequence with specific varibale residues

<220>
 <221> variant
 <222> (1)..(1)
 <223> X is His, D-His, desamino-His, 2-amino-His, beta.hydroxy-His, homo-His, alpha-fluoromethyl-His, or alpha-methyl-His

<220>
 <221> variant
 <222> (2)..(2)
 <223> X is Ala, Gly, Val, Thr, Ile, or alpha-methyl-Ala

<220>
 <221> variant
 <222> (15)..(15)
 <223> X is Glu, Gln, Ala, Thr, Ser or Gly

<220>
 <221> variant
 <222> (21)..(21)
 <223> X is Glu, Gln, Ala, Thr, Ser or Gly

<220>
 <221> variant
 <222> (31)..(31)
 <223> X is

<220>
 <221> variant
 <222> (31)..(31)
 <223> X is NH2 or Gly-OH, providing that the compound has an isoelectric point in the range from about 6.0 to about 9.0 and further providing that when X at position 1 is His, X at position 2 is Ala, X at position 15 is Glu and X at position 21 is Glu, X

<400> 34

Xaa Xaa Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Xaa Gly
 1 5 10 15

Gln Ala Ala Lys Xaa Phe Ile Ala Trp Leu Val Lys Gly Arg Xaa
 20 25 30